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10/061,809	02/01/2002	Gregory Michael Perkins	MATI-209US	1886

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EXAMINER

HENNING, MATTHEW T

ART UNIT	PAPER NUMBER
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2131

DATE MAILED: 05/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/061,809

Applicant(s)

PERKINS, GREGORY MICHAEL

Examiner

Matthew T. Henning

Art Unit

2131

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 March 2002 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2/1/02, 1/7/05</u> | 6) <input type="checkbox"/> Other: _____ |

This action is in response to the communication filed on 2/1/2002.

DETAILED ACTION

1. Claims 1-16 have been examined.

Title

2. The title of the invention is acceptable.

Priority

3. This application has no priority claimed.
4. Therefore, the effective filing date for the subject matter defined in the pending claims in this application is 2/1/2002.

Information Disclosure Statement

5. The information disclosure statement(s) (IDS) submitted on 2/1/2002 and 1/7/2005 are in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner is considering the information disclosure statements.

Drawings

6. The drawings filed on 3/4/2002 are acceptable for examination proceedings.

Specification

7. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

8. The abstract of the disclosure is objected to because:

Line 1: The phrase "The disclosure is directed to" should be removed as it is implied.

The abstract fails to meet the length requirements of 50-150 words.

Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 2, and 12-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

11. Claim 2 recites the limitation "a first value" in line 4. However, claim 2 depends from claim 1 which also recites the limitation "a first value" in line 4. As such, the ordinary person would be unable to determine whether "a first value" in claim 2 was meant to be the same first value as recited by claim 1, or whether this was a different first value. Therefore, the ordinary person would not be able to determine the scope of the claim. As such, claim 2 is rejected for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention.

12. Claims 14 and 15 are rejected by the same reasoning as claim 2 above due to the duplicate recitation of the limitations "a first value" and "a second value" respectively with respect to claim 12.

13. The term "similar" in claim 12 is a relative term which renders the claim indefinite. The term "similar" is not defined by the claim, the specification does not provide a standard for

Art Unit: 2131

ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The ordinary person skilled in the art would not be able to determine the scope of this claim because the ordinary person skilled in the art would be unable to determine how alike two polymorphic statements would have to be to be considered “similar”. For example, the ordinary person skilled in the art would wonder whether the statement “ $X = A + B$ ” is “similar” to any of “ $X = B + A$ ” or “ $Y = A + B$ ” or “ $X = A * B$ ”. Therefore, the ordinary person would be unable to determine the scope of claim 12. As such, claim 12 is rejected for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention.

14. Claim 13 is rejected by the same reasoning as claim 12 as applied to “similar” in Line 8.

15. Claims 13-15 are rejected by virtue of their dependency to claim 12.

Claim Rejections - 35 USC § 102

16. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

17. Claims 1-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Luo et al. (WO 00/68875) hereinafter referred to as Luo.

18. Regarding claim 1, Luo disclosed a method of marking for authentication a computer program with a bit- string pattern (See Luo Abstract), the method comprising the steps of: a) generating a bit-string pattern, each bit in the bit-string pattern having a binary value and at least

Art Unit: 2131

one bit having a first value (See Luo Fig. 8 Step 807 and Page 22 Paragraph 3); b) searching for at least one polymorphic statement in the computer program (See Luo Fig. 8 Step 809 and Page 22 Paragraphs 2-3 wherein all the instructions were “polymorphic statements” because they could all be modified by combining with a “nop”, or no operation instruction and still provide the same function); c) associating the one bit having the first value with the polymorphic statement found in step (b) (See Luo Fig. 8 Step 809 and Page 22 Paragraph 3); and d) altering the polymorphic statement (See Luo Fig. 8 Step 813 and Page 22 Paragraph); wherein altering the polymorphic statement marks the computer program (See Luo Page 22 Paragraph 3).

19. Regarding claim 2, Luo disclosed that the generating the bit-string pattern includes generating multiple bits having first and second values (See Fig. 8 and Page 22 Paragraphs 2-3); associating each of the multiple bits with a polymorphic statement (See Fig. 8 and Page 22 Paragraph 3); modifying a polymorphic statement corresponding to a bit having a first value (See Fig. 8 and Page 22 Paragraph 3); and leaving unmodified a polymorphic statement corresponding to a bit having a second value (See Fig. 8 and Page 22 Paragraph 3).

20. Regarding claim 3, Luo disclosed the step of: e) providing a pointer for locating a statement in the computer program (See Key of Luo Fig. 8 and Page 22 Paragraph 3); and searching for the one polymorphic statement in step (b) includes searching for the one polymorphic statement based on the statement located by the pointer (See Luo Fig. 8 Step 809 and Page 22 Paragraph 3).

21. Regarding claim 4, Luo disclosed a method of marking, for authentication, source code of a computer program, designated as P, and having a complied version of the computer program, designated as E (See Luo Page 22 Paragraph 2 – Page 23 Paragraph 2), the method comprising

Art Unit: 2131

the steps of: a) generating a binary bit-string pattern, designated as B, having a predetermined value (See Luo Fig. 8 Step 807 and Page 22 Paragraph 3); b) modifying P to produce a separate program P1, such that the separate program P1, when compiled, functions identically to P (See Luo Fig. 8 Step 811-813 and Page 22 Paragraphs 2-3 and Further Page 7 Paragraph 5 – Page 8 Paragraph 1)); wherein modifying P includes one of the following steps: i) modifying inline assembly code of P based on B; and ii) manipulating binary executable code of E based on B (See Luo Page 22 Paragraph 3 – Page 23 Paragraph 2).

22. Regarding claim 5, Luo disclosed that step (a) generates a binary bit-string pattern having a value not equal to zero (See Luo Page 22 Paragraph 3 wherein both 1's and 0's are contained in the bit-string).

23. Regarding claim 6, Luo disclosed that step (i) includes correlating a binary bit in B to at least one statement of inline assembly code of P, and modifying the one statement when the binary bit has a first value (See Luo Fig. 8 Steps 809-813 and Page 22 Paragraph 3).

24. Regarding claim 7, Luo disclosed that the first value of the binary bit is 1 (See Luo Page 22 Paragraph 3).

25. Regarding claim 8, Luo disclosed a method of marking for authentication a computer program with a bit- string pattern, the bit-string pattern including a plurality of values (See Luo Fig. 8 and Page 22 Paragraph 3), the method comprising the steps of : a) associating the plurality of values with a respective plurality of predetermined computer statements, in which each predetermined computer statement is expressible as first and second equivalent operations (See Luo Page 22 Paragraph 3 and Fig. 8 Steps 809-813); b) selecting a first non-processed value of the bit-string pattern (See Fig. 8 Step 811); c) searching the computer program for at least one

Art Unit: 2131

predetermined computer statement corresponding to the first non-processed value of the bit-string pattern (See Fig. 8 Step 809 and Page 22 Paragraph 3); d) expressing the predetermined computer statement found in step (c) as one of the first and second equivalent operations (See Luo Fig. 8 Step 813 and Page 22 Paragraphs 2-3); e) marking the first non-processed value of the bit-string pattern as processed (See Luo Fig. 8 and Step 811 wherein the marking was inherent in the loop structure); and f) repeating steps (b) through (e) for each non-processed value of the bit-string pattern (See Luo Fig. 8 Loop 811 and step 809).

26. Regarding claim 9, Luo disclosed that step (d) includes altering the predetermined computer statement from the first operation to the second operation, if the first non-processed value of the bit-string pattern is a value of 1 (See Luo Fig. 8 Step 813).

27. Regarding claim 10, Luo disclosed the step of: generating the bit-string pattern having multiple bits of first and second values and a bit length smaller than or equal to a number of predetermined statements in the computer program (See Fig. 8 Step 807).

28. Regarding claim 11, Luo disclosed the step of: g) providing a pointer for locating a predetermined statement in the computer program (See Luo Fig. 8 Step 809 Element Key); and searching the computer program of step (c) includes searching for the predetermined statement located by the pointer in step (g) (See Fig. 8 Step 809 and Page 22 Paragraph 3).

29. Regarding claim 12, Luo disclosed a method of authenticating a second computer program against a first computer program (See Luo Page 22 Paragraph 4 – Page 23 Paragraph 1), the method comprising the steps of: a) accessing a bit-string pattern, each bit in the bit-string pattern having a binary value and at least one bit having a first value (See Luo Page 22 Paragraph 4 and Fig. 8 Steps 825); b) searching for at least one polymorphic statement in the second

Art Unit: 2131

computer program (See Luo Page 22 Paragraph 4 and Fig. 8 Step 821); (c) associating the one bit having the first value with the polymorphic statement found in step (b) (See Luo Page 22 Paragraph 4 and Fig. 8 Step 825); d) altering the polymorphic statement in the second computer program (See Luo Page 22 Paragraph 4 and Fig. 8 Step 829); e) comparing the polymorphic statement in the second computer program, after altering the polymorphic statement in step (d), against a corresponding polymorphic statement in the first computer program (See Luo Page 22 Paragraph 4 – Page 23 Paragraph 1 and Fig. 8 Step 833); and f) determining that the second computer program is a modified version of the first computer program, if the polymorphic statements compared in step (e) are not similar (See Luo Page 22 Paragraph 2 – Page 23 Paragraph 1 and Fig. 8 Steps 833 and 835).

30. Regarding claim 13, Luo disclosed the steps of: (g) associating another bit having a second value with another polymorphic statement found in step (b) (See Luo Page 22 Paragraph 4 and Fig. 8 Step 825); (h) comparing the other polymorphic statement of step (g) against a corresponding polymorphic statement in the first computer program (See Luo Page 22 Paragraph 2 – Page 23 Paragraph 1); and (i) determining that the second computer program is a modified version of the first computer program, if the polymorphic statements compared in step (h) are not similar (See Luo Page 22 Paragraph 4 – Page 23 Paragraph 1 and Fig. 8 Steps 833-835).

31. Regarding claim 14, Luo disclosed the step of : repeating steps (b) through f) for another bit in the bit-string pattern having a first value (See Luo Page 22 Paragraph 4 – Page 23 Paragraph 1 and Fig. 8 Loop 823-825 wherein the whole watermark was compared).

Art Unit: 2131

32. Regarding claim 15, Luo disclosed the step of : repeating steps (g) through (i) for another bit in the bit-string pattern having a second value (See Luo Page 22 Paragraph 4 – Page 23 Paragraph 1 and Fig. 8 Loop 823-825 wherein the whole watermark was compared).

33. Regarding claim 16, Luo disclosed a method of authenticating a second computer program against a first computer program, the method comprising the steps of : a) accessing a first bit-string pattern, each bit in the first bit-string pattern having a binary value associated with a corresponding polymorphic statement in the first computer program (See Luo Fig. 8 Step 831 and Page 22 Paragraph 4); b) searching for at least one polymorphic statement in the second computer program (See Luo Fig. 8 Step 821 and Page 22 Paragraph 4); c) assigning a bit having a binary value to the polymorphic statement found in step (b) (See Luo Fig. 8 Step 825 and Page 22 Paragraph 4); d) assigning another bit having a binary value to another polymorphic statement found in step (b) (See Luo Fig. 8 Steps 823-825 and Page 22 Paragraph 4); e) generating a second bit-string pattern including the bits assigned in steps (c) and (d) (See Luo Fig. 8 Step 825 and Page 22 Paragraph 4) ; and f) determining that the second computer program is a modified version of the first computer program, if the second bit-string pattern does not match the first bit-string pattern (See Luo Page 22 Paragraph 4 – Page 23 Paragraph 1 and Fig. 8 Steps 833-837).

Conclusion

34. Claims 1-16 have been rejected.

35. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


- a. Torribia-Saez (US Patent Number 6,591,415) disclosed a system for marking programs for authentication by changing polymorphic procedures.

Art Unit: 2131

36. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew T. Henning whose telephone number is (571) 272-3790. The examiner can normally be reached on M-F 8-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz Sheikh can be reached on (571) 272-3795. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Matthew Henning
Assistant Examiner
Art Unit 2131
4/28/05



AYAZ SHEIKH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100